

## PATENT CLAIMS

1. A method for the removal of silver from a cuprous chloride solution in a copper recovery process, **characterized in that** silver is removed from a cuprous chloride solution with soluble mercury using fine-grained copper in at least two stages, whereby mercury is fed to the solution at different stages in a certain molar ratio with regard to the silver in the solution, a generated silver amalgam is precipitated on the surface of fine-grained copper, the amalgam is removed from the solution for the separation of mercury and silver, after which soluble mercury is recycled back to silver removal and the precipitated silver compound is treated for the recovery of silver.
2. A method according to claim 1, **characterized in that** the molar ratio of mercury to silver in the first amalgam precipitation stage is 0.5– 2.
3. A method according to claims 1 or 2, **characterized in that** the molar ratio of mercury to silver in the second amalgam precipitation stage is at least 2.
4. A method according to any of the preceding claims, **characterized in that** the molar ratio of mercury to silver in the second amalgam precipitation stage is between 2 – 10.
5. A method according to any of the preceding claims, **characterized in that** the particle size of the fine-grained copper is less than 200  $\mu\text{m}$ .
6. A method according to claim 5, **characterized in that** the amount of copper powder feed is in the range of 100 g/L.

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7. A method according any of the preceding claims, **characterized in that** the copper powder is fed to a mercury removal stage after the silver removal stages, from which it moves countercurrently in relation to the solution flow.
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8. A method according to any of the prededing claims, **characterized in that** the precipitated silver amalgam is leached into a dilute chloride solution using an oxidant, whereby the mercury dissolves as mercury chloride and the silver precipitates as silver chloride.
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9. A method according to claim 8, **characterized in that** the oxidant used is sodium hypochlorite.
10. A method according to claim 8, **characterized in that** the oxidant used is hydrogen peroxide.
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11. A method according to claim 8, **characterized in that** the oxidant used is oxygen.
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12. A method according to claim 8, **characterized in that** the mercury chloride is routed back to silver leaching.
13. A method according to any of the preceding claims, **characterized in that** the silver chloride is routed to silver recovery.
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14. A method according to any of the preceding claims, **characterized in that** the alkali chloride content of the concentrated chloride solution is at least 200 g/L.
15. A method according to any of the prededing claims, **characterized in that** the amount of monovalent copper in the solution to be purified is 30 – 100 g/L.

16. A method according to any of the preceding claims, **characterized in that** silver removal is performed at a pH value of 1 - 5.
- 5 17. A method according to any of the preceding claims, **characterized in that** before the amalgam precipitation that occurs with mercury, the silver is removed from the cuprous chloride solution using fine-grained copper.
- 10 18. A method according to claim 17, **characterized in that** the particle size of the copper powder is less than 200  $\mu\text{m}$ .
19. A method according to claim 18, **characterized in that** the amount of copper powder feed is around 100 g/L.